MITSUBISHI MOTOR SALES OF AMERICA, Inc.

TECHNICAL SERVICE BULLETIN

SUBJECT:

OXYGEN SENSOR CHECKING

NO.	TSB-91-13-004
DATE	March, 1991
MODEL	All

PURPOSE

This bulletin supplies Service Technicians with oxygen sensor diagnosis information. On page 3 of this bulletin is a flow chart that should be used when diagnosing a suspected oxygen sensor malfunction including special steps for 1989 – 1990 Federal Trucks equipped with single–wire oxygen sensors.

GENERAL OXYGEN SENSOR INFORMATION

The oxygen sensor detects the concentration of oxygen in the exhaust gases, converting the concentration data into a constantly varying voltage. The sensor begins functioning at approximately 600° F. Below 600° F the voltage produced is not accurate. Therefore, it is necessary to warm up the engine to normal operating temperature (180 - 190° F) before checking the voltage.

If the air-fuel mixture is richer than the optimum ratio, a voltage of up to approximately 1V is produced; conversely, if the air-fuel mixture is leaner than optimum, then the voltage approaches 0V.

The electronic control unit interprets the oxygen sensor voltage and along with information from other inputs, regulates the amount of fuel injected. The oxygen sensor assists Air/Fuel ratio control only when the engine is warm. Its signal has no effect when cold and during warm-up.

If the oxygen sensor output voltage deviates from the standard value, and the diagnosis shows the is sensor is operating properly, the cause is probably a malfunction of a component related to air-fuel mixture ratio control and not the Oxygen Sensor itself.

For example:

- Improper wiring connection.
- Fuel injector malfunction.
- Air leakage into the intake manifold.
- Malfunction of the air-flow sensor, intake air temperature sensor, atmospheric pressure sensor, or water temperature sensor.

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FILE UNDER: Group 13 Fuel in the Dealer Service Information Binder (911)

CIRCULATE TO:			
☐ SERVICE ADVISOR	☑ SERVICE MANAGER	☐ WARRANTY PROCESSOR	☐ SALES MANAGER
☐ GENERAL MANAGER	☐ PARTS MANAGER	☑ TECHNICIAN	

WARRANTY INFORMATION

Standard warranty procedures apply.

SPECIFIC DIAGNOSTIC INFORMATION

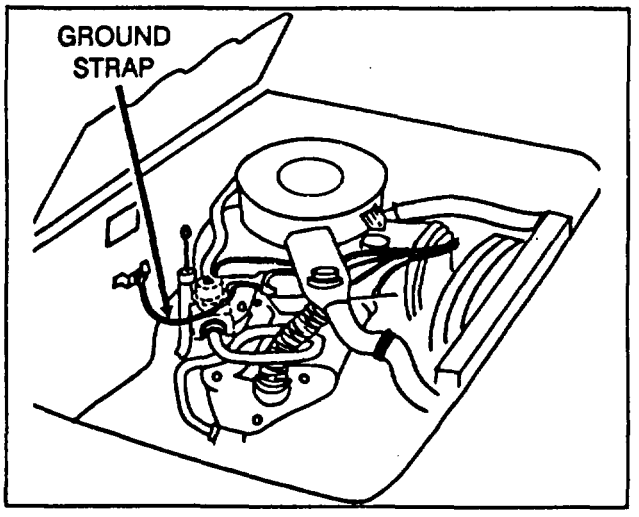
Refer to the applicable service manual for specific diagnostic information.

CAUTION: When performing specific service manual diagnostic inspections, use only a Digital Volt Ohm Meter.

PARTS INFORMATION

Ground Strap: MB542439

(For use on 1989 - 1990 Federal Trucks).



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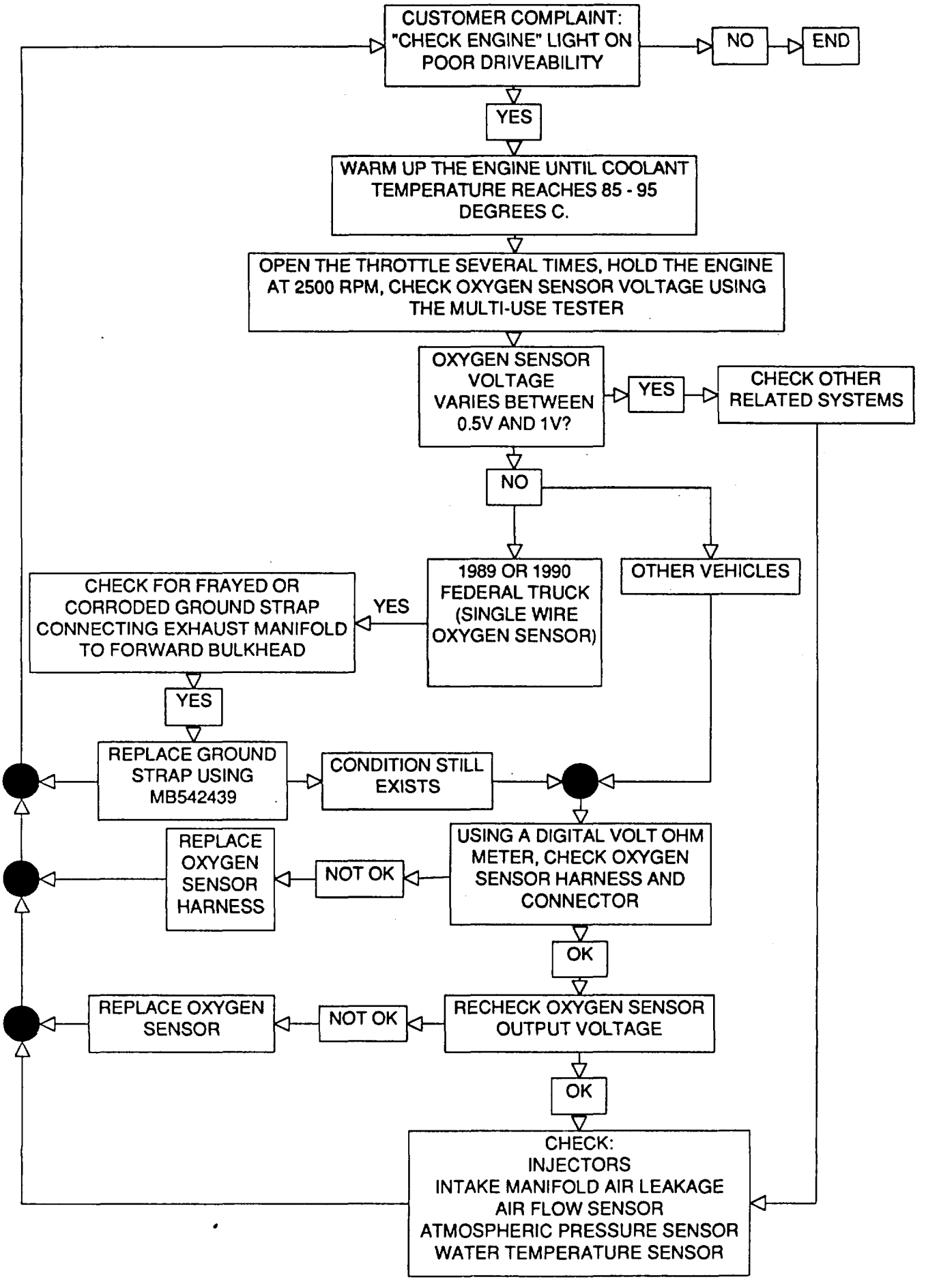
OXYGEN SENSOR DIAGNOSIS


CUSTOMER COMPLAINT: "CHECK ENGINE" LIGHT ON POOR DRIVEABILITY
NO
END
YES
WARM UP THE ENGINE UNTIL COOLANT TEMPERATURE REACHES 85 - 95 DEGREES C.
OPEN THE THROTTLE SEVERAL TIMES, HOLD THE ENGINE AT 2500 RPM, CHECK OXYGEN SENSOR VOLTAGE USING THE MULTI-USE TESTER
OXYGEN SENSOR VOLTAGE VARIES BETWEEN 0.5V AND 1V?
YES
CHECK OTHER RELATED SYSTEMS
NO
1989 OR 1990 FEDERAL TRUCK (SINGLE WIRE OXYGEN SENSOR)
OTHER VEHICLES
CHECK FOR FRAYED OR CORRODED GROUND STRAP CONNECTING EXHAUST MANIFOLD TO FORWARD BULKHEAD
YES
YES
REPLACE GROUND STRAP USING MB542439
CONDITION STILL EXISTS
USING A DIGITAL VOLT OHM METER, CHECK OXYGEN SENSOR HARNESS AND CONNECTOR
REPLACE OXYGEN SENSOR HARNESS
NOT OK
OK
REPLACE OXYGEN SENSOR
NOT OK
RECHECK OXYGEN SENSOR OUTPUT VOLTAGE
OK
CHECK:
INJECTORS
INTAKE MANIFOLD AIR LEAKAGE
AIR FLOW SENSOR
ATMOSPHERIC PRESSURE SENSOR
WATER TEMPERATURE SENSOR